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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/730,018 | 12/09/2003 | Mitsuo Watanabe | 031303 | 2775 |

23850 7590 10/20/2006

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EXAMINER

PAIK, STEVE S

ART UNIT PAPER NUMBER

2876

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,018

Applicant(s)

WATANABE ET AL.

Examiner

Steven S. Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-18 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Receipt is acknowledged of the Amendment filed July 24, 2006. The applicant amended claim 1 to distinguish the claimed invention over the prior art.

Claim Objections

2. Claim 1 is objected to because of the following informalities: the phrase, "most suitable" appears to be indefinite. The examiner respectfully requests the applicant to recite it in precise manner. Any conventional barcode reader including a photodetector or sensor receiving a reflected light from a barcode may be interpreted as the detector or sensor is most suitably positioned within the barcode reader. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swartz (US 6,871,786) in view of Correa et al. (US 6,340,114B1).

Swartz discloses a method and an apparatus for reading (barcode reader 100 in Fig. 1) and writing barcodes comprising a first arrangement to mount (col. 6, ll. 45-67) a converting element (detector 111 (Dictionary.com defines "photodetector" as any device, as a photodiode, phototube, or photovoltaic cell, that uses the photoelectric effect to convert radiant energy into an electrical signal)) that receives a light reflected from a bar code (108) and converts the light

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received to an electrical signal (col. 2, ll. 43-51) and a second arrangement to mount (col. 6, ll. 45-67) a processing unit (digitizer 117, decoder 118, and a controller 116) that reproduces the barcode from the electric signal (col. 2, ll. 53-67; col. 5, ll. 63-67). Swartz further discloses the processing unit includes a first processor that reproduces a pattern of the bar code from the electric signal (digitizer 117) and a second processor (decoder 118) that reproduces the bar code based on the pattern, wherein the processing unit (digitizer 117, decoder 118, and a controller 116) includes an A/D converter (digitizer 117) that converts the electric signal (from the photo detector 111) into a digital signal (col. 2, ll. 52-55), a first processor that extracts edge information (start and stop characters and the characters between them) from the digital signal (col. 2 line 63- col. 3, line 6), a second processor (decoder 118) that reproduces a pattern of the barcode from the edge information, and a third processor (controller 116 is used to decode symbols and/or interface with external equipment) that reproduces the bar code from the pattern. Swartz further states that in the conventional scanning systems, the light beam is directed by lens or similar optical components along a light path toward a target symbol. The scanner operates by repetitively scanning the light beam in a line or a series of lines across the target symbol by movement of a scanning component such as a mirror disposed in the path of the light beam. The scanning component may sweep the beam spot across the symbol, trace a scan line across and beyond the boundaries of the symbol, and/or scan a predetermined field of view. Scanning systems also include a sensor or **photodetector** which functions to detect light reflected or scattered from the symbol. The photodetector or sensor is positioned in the scanner in an optical path (most suitable position for receiving light reflected from the barcode) so that it has a field of view which extends at least across and slightly beyond the boundaries of the symbol. A portion

of the **light beam reflected from the symbol is detected** and converted into an analog electrical signal. The analog electrical signal produced by the photodetector is converted by a digitizer circuit in the scanner into a pulse-width modulated digital signal having widths corresponding to the physical widths of the symbol elements.

However, Swartz does not specifically disclose a first circuit board and a second circuit board that are separate and distinct from each other and the first circuit board is irrespective of the position of the second circuit board.

Correa discloses an optical code imaging engine 10 of a preferred embodiment of his invention. Figure 1 is an exploded view illustrating certain optical paths and subsystems of the imaging engine. As shown, the imaging engine **includes various circuit boards, optical elements and chassis elements**. A packaged image sensor 12 is located on an image sensor board 14. The image sensor board 14 may also contain image acquisition circuitry associated with the image sensor 12. The examples of various circuit boards are, an illumination printed circuit board, CCD circuit board, logic board, etc. As clearly disclosed, in the Correa reference, the optical reader can be manufactured by electrically connecting various circuit boards in a proper manner. It is extremely beneficial in terms of saving manufacturing and repairing cost of the optical reader since various circuit boards with distinctive functions can be put together as a complete optical reader or a defective or damaged circuit board can simply be replaced with a new one.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have employed various circuit boards of an optical reader as

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taught by Correa into the optical reader of Swartz for the purpose of reducing the cost of manufacturing and maintenance of the optical reader.

5. Claims 4-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swartz (US 6,871,786) as modified by Correa et al. (US 6,340,114B1) as applied to claim 2 above, and further in view of Komizo (US 5,663,552).

Re claims 4-7, the teachings of Swartz in view of Correa et al. have been fully discussed above. Swartz further discloses that it is common for various operational parameters to be defined in software (a computer program) to adapt the scanner for use in specific applications.

However, neither Swartz nor Correa et al. discloses explicitly a barcode reader including a storage unit (memory) that stores computer programs.

Komizo discloses a portable terminal apparatus having image processing function. The apparatus further comprises, among other things, a CPU, a memory (ROM), an image frame memory (107), an A/D converter, and another memory (RAM) for processing an optical image in a predetermined manner. The memories (ROM, RAM, and 107) are obviously used for storing image data related to the optical image, operational parameters and software to properly process the image.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have incorporated various types of memory as taught by Komizo into the teachings of Swartz and Correa et al. for the purpose of storing image data related to the optical image, operational parameters and software to properly and efficiently process the image.

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Re claims 8 and 9, Swartz as modified by Correa and further in view of Komizo discloses the barcode reader as recited in rejected claim 5 stated above, wherein one of the first processor and the second processor functions, and the third processor (digitizer, decoder, and controller) functions as a managing processor as a managing the computer program (operational parameters and software) in the storage unit (memories).

Re claims 10 and 11, Swartz as modified by Correa and further in view of Komizo discloses the barcode reader as recited in rejected claims 4 and 5 stated above respectively, further a communicating unit (123) that receives new computer program or an updated version of the computer program stored in the storage, unit from an external unit, and writes the new computer program or overwrites the updated version on a corresponding computer program in the storage unit (col. 6, line 23 – col. 7, line 23).

Re claims 12 and 13, Swartz as modified by Correa and further in view of Komizo discloses the barcode reader as recited in rejected claims 10 and 11 stated above respectively, wherein communicating unit transmits the bar code reproduced to the external unit (col. 7, ll. 9-18).

Re claims 14 and 15, Swartz as modified by Correa and further discloses the barcode reading apparatus as recited in rejected claim 1 stated above, a third arrangement to mount a converting element that receives a light reflected from the bar code (the optical symbol is intended to be broadly construed and to cover not only patterns composed of alternating bars and spaces of various widths, but also other one or two dimensional graphic patterns, as well as alphanumeric characters) and converts the light received to a third electric signal (the electrical signal generated from an reflected light off of a one dimensional bar code is different from that

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of a two dimensional barcode), wherein the processing unit (digitizer 117, decoder 118, and a controller 116) mounted on the second arrangement also reproduces the bar code from the third electric signal.

Method claims 16-18 are essentially the same in scope as apparatus claims 1, 4, 9 and 12 and are rejected similarly. Although Swartz does not specify a type of photodetector in the reference, it is well known that a photodiode functions as a photodetector in a barcode reader. The photodiode produces an analog electrical signal read from a portion of the light beam reflected from a barcode symbol. Then a digitizer circuit generates a digital signal from the analog electrical signal for the purpose of decoding the information encoded in the barcode format. Therefore, the first circuit board includes the photodetector and the second circuit board comprises additional processors and a storage unit.

Response to Arguments

6. Applicant's arguments filed July 24, 2006 have been fully considered but they are not persuasive.

The applicant argues that neither Swartz et al. nor Correa et al. describe using a photodiode to detect light from a barcode and positioning the light detector that is located on a circuit board placed at a position that is most suitable for receiving light reflected from the barcode. (Pages 8-13)

The examiner respectfully disagrees. As discussed in this Office action, Swartz discloses that scanning systems include a sensor or photodetector which functions to detect light reflected or scattered from the symbol. The photodetector or sensor is positioned in the scanner in an optical path (most suitable) so that it has a field of view which extends at least across and slightly

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beyond the boundaries of the symbol (barcode). A portion of the light beam reflected from the symbol is detected and converted into an analog electrical signal (This is conventionally what a photodetector, photodiode, or a sensor does to decode a barcode).

In light of above discussion, claims 1-18 remain rejected under 35 U.S.C. 103(a).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven S. Paik whose telephone number is 571-272-2404. The examiner can normally be reached on Monday - Friday 5:30a-2:00p (Maxi-Flex*).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on 571-272-2398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Steven S. Paik
Primary Examiner
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ssp